

A Taxonomical Study of the Japanese Spider Hitherto
Misidentified with *Argiope keyserlingi* (KARSCH, 1878)
or *A. aetherea* (WALCKENAER, 1841)

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谷川明男¹⁾: ムシバミコガネグモの分類学的検討

Abstract The orb-web spider, *Argiope aetheroides* YIN *et al.*, 1989, is recorded from Japan. The spiders of the species have been wrongly identified with *Argiope keyserlingi* (KARSCH, 1878) or *Argiope aetherea* (WALCKENAER, 1841) by the previous Japanese authors.

When LEVI (1983) revised the spiders of the genera *Argiope*, *Gea* and *Neogea* from the Western Pacific region including Japan, he examined 6 Japanese species: *Argiope aemula* (WALCKENAER, 1841), *A. boesenbergi* LEVI, 1983, *A. amoena* L. KOCH, 1878, *A. bruennichii* (SCOPOLI, 1772), *A. minuta* KARSCH, 1879, and *A. ocula* FOX, 1938. Moreover, a doubtful species of the genus is occurring in Japan, which has been identified either with *A. keyserlingi* (KARSCH, 1878) (KISHIDA, 1936; YAGINUMA, 1968, 1970, 1977; YAGINUMA & SHINKAI, 1971) or with *A. aetherea* (WALCKENAER, 1841) (SHINKAI & TAKANO, 1984, 1987; YAGINUMA, 1986; YAGINUMA *et al.*, 1990). In 1990, I collected female and male specimens of the species from Yakushima Island, Kagoshima Pref., Japan, and could confirm the fact that the features of these specimens did not agree with LEVI's (1983) redescrptions and figures of *A. keyserlingi* and *A. aetherea*. Then, many specimens of the species were offered by colleagues and collected by myself. After a careful examination of these materials, I came to the conclusion that the species was neither *A. keyserlingi* nor *A. aetherea* but *A. aetheroides* YIN *et al.*, 1989. The species will be reported and redescrbed in this paper.

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Following abbreviations are used in this paper; HNU, Hunan Normal University; MOA, median ocular area; NSMT, National Science Museum (Natural

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Argiope aetheroides YIN *et al.*, 1989

(Figs. 1–7)

Coganargiope keyserlingi: KISHIDA, 1936, p. 26, pl. 3, fig. 1 [nec *Argiope keyserlingi* (KARSCH, 1878)].
Argiope keyserlingi: YAGINUMA, 1968, p. 60; 1970, p. 658; 1977, p. 386.—YAGINUMA & SHINKAI, 1971, p. 18 [nec *Argiope keyserlingi* (KARSCH, 1878)].
Argiope aetherea: SHINKAI & TAKANO, 1984, p. 79; 1987, p. 123.—YAGINUMA, 1986, p. 114, fig. 59, pl. 30, fig. 5.—YAGINUMA *et al.*, 1990, p. 258 [nec *Argiope aetherea* (WALCKENAER, 1841)].
Argiope aetheroides YIN *et al.*, 1989, p. 61, fig. 1 (female holotype, unavailable; specimens determined by the original author, examined).

Specimens examined. JAPAN: 1♀, Minami-izu-chô, Kamo-gun, Sizuoka Pref., 25–VII–1992, K. SATO leg. (NSMT–Ar 3113); 1♀, Kimoto-chô, Kumano-shi, Mie Pref., 26–VII–1993, S. TAZOE leg.; 1♀, 3–VIII–1991, 2♀♀, 23–VII–1993, Totsukawamura, Yoshino-gun, Nara Pref., A. TANIKAWA leg.; 4♀♀, Kiwa-chô, Minamimuro-gun, Mie Pref., A. TANIKAWA leg., 1♀, 3–VIII–1991, 10♀♀ 1♂, 23–VII–1993 (3♀♀ 1♂: NSMT–Ar 3114–3117), Kumanogawa-chô, Higashimuro-gun, Wakayama Pref., A. TANIKAWA leg.; 1♀, Takada, Shingû-shi, Wakayama Pref., 23–VII–1993, A. TANIKAWA leg.; 2♀♀, 2–VIII–1991, 1♀, 4–VIII–1991 (NSMT–Ar 3118), 12♀♀, 22–VII–1993 (1♀: NSMT–Ar 3119), 2♀♀, 24–VII–1993, Nachikatsuûra-chô, Higashimuro-gun, Wakayama Pref., A. TANIKAWA leg.; 1♀, Kozagawa-chô, Higashimuro-gun, Wakayama Pref., 23–VIII–1993, A. TANIKAWA leg.; 1♀, Mt. Aoi-dake, Kitamorokata-gun, Miyazaki Pref., 6–IX–1993, C. OKUMA leg.; 1♂, Tomarikawa, Yakushima Is., Kagoshima Pref., 14–VII–1990, A. TANIKAWA leg. (NSMT–Ar 3120); 1♀, Miyanoura, Yakushima Is., Kagoshima Pref., 15–VII–1990, A. TANIKAWA leg. (NSMT–Ar 3121).

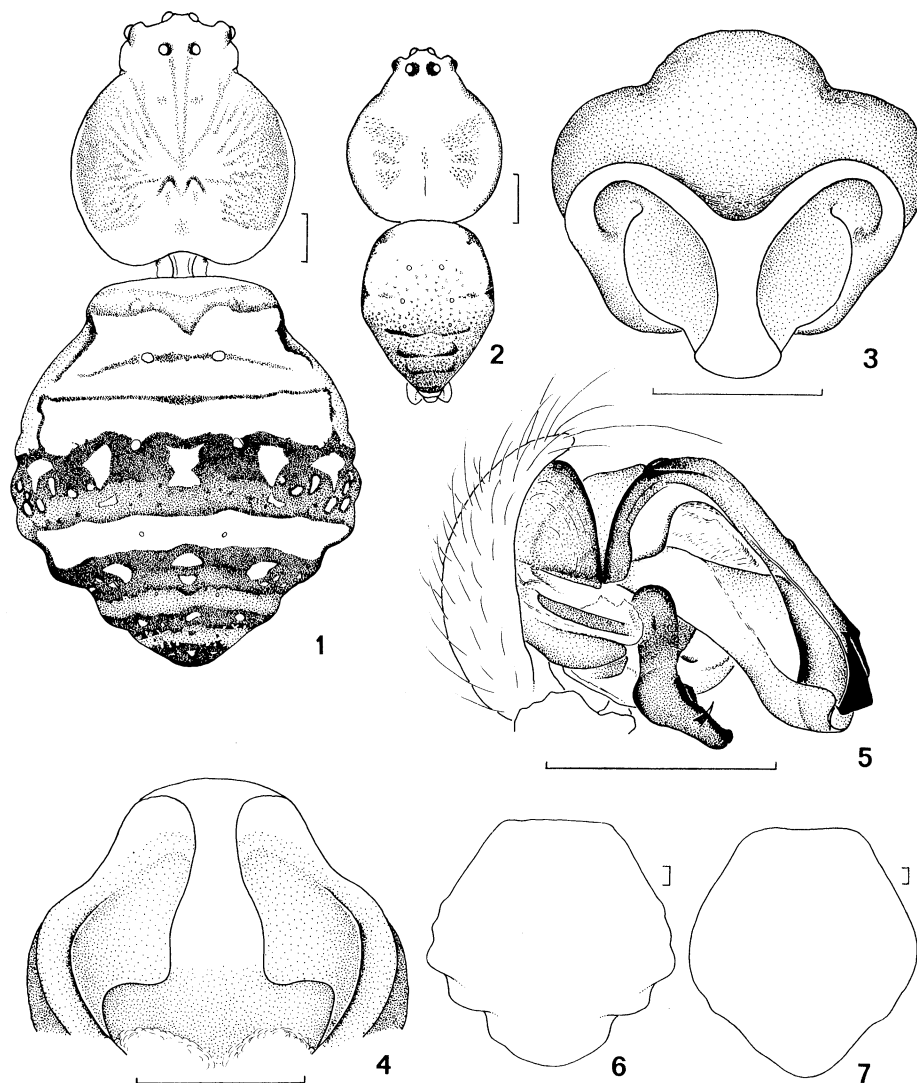
CHINA: 1♀1♂, Shimen County, Hunan, 25–VI–5–VII–1992, PENG & XIE leg. (HNU).

Description (based on the Japanese specimens). Measurement (in mm). Body length ♀ 9.10–18.20, ♂ 3.44–4.80; carapace length ♀ 3.76–6.96, ♂ 1.78–2.77, width ♀ 3.16–6.00, ♂ 1.60–2.46; abdomen length ♀ 5.20–10.56, ♂ 1.78–2.63, width ♀ 4.29–10.44, ♂ 1.32–1.94. Length of legs of 1♀1♂ from Kumanogawa-chô, Wakayama Pref. as shown in Table 1.

Female. Carapace length/width 1.15–1.19; MOA length/width 1.04–1.15, anterior width/posterior width 0.75–0.86. Chelicera with 4 promarginal and 2–3 retromarginal teeth. Labium length/width 0.58–0.70; sternum length/width 0.91–

Table 1. Measurement of leg segments of *Argiope aetheroides*, YIN *et al.*, 1989 (in mm; ♀/♂).

Leg	Tarsus	Metatarsus	Tibia	Patella	Femur	Total
I	1.84/0.82	7.04/1.86	5.20/1.41	2.20/0.64	6.92/1.88	23.20/6.61
II	1.68/0.92	6.72/2.06	5.12/1.63	2.24/0.74	6.96/2.09	22.72/7.44
III	1.04/0.62	2.84/0.95	2.08/0.75	1.28/0.48	3.68/1.32	10.92/4.12
IV	1.12/0.64	4.92/1.58	3.36/1.16	1.68/0.66	5.84/1.86	16.92/5.90



Figs. 1-7. *Argiope aetheroides* YIN *et al.*, 1989.—1. Cephalothorax and abdomen of female, dorsal view. 2. Cephalothorax and abdomen of male, dorsal view. 3. Epigynum, ventral view. 4. Same, posterior view. 5. Male palp, mesal view. 6-7. Out line of female abdomen, dorsal view. (Scales: 0.5 mm.)

0.94. Length of leg I/carapace 4.69-5.61. Abdomen length/width 1.00-1.21, its shape somewhat varied, usually with low lobes (Figs. 1, 6-7). Epigynum as shown in Figs. 3-4.

Male. Carapace length/width 1.11-1.13; MOA length/width 0.98-1.04, anterior width/posterior width 0.78-0.81. Chelicera with 3-4 promarginal and 1-3 retromarginal teeth. Labium length/width 0.53-0.57; sternum length/width 0.96-

1.07. Length of leg I/carapace 3.71–4.84. Male palp as shown in Fig. 5. Abdomen length/width 1.35.

Coloration and markings. Female: Carapace yellow, mottled with dark brown, with many white hairs. Abdomen white, with transverse black lines, black bands, and dark orange bands; dark coloured bands with white patches (Fig. 1).

Male: Carapace yellowish brown, mottled with dark grey. Abdomen whitish yellow with dark grey spots and same colored markings as in Fig. 2.

Range. Japan, China.

Remarks. *Argiope aetheroides* seems to be closely related to *Argiope luzona* (WALCKENAER, 1841) from the Philippines. The shapes of the emboli of male palpi of these species resemble each other, but entirely differ from those of the other species of the genus. These species can be distinguished from each other by the shape and the pattern of female abdomen and by the shape of the conductor of the male palp.

摘 要

ムシバミコガネグモは、これまで *Argiope keyserlingi* (KARSCH, 1878) あるいは *Argiope aetherea* (WALCKENAER, 1841) に同定されてきた。しかし、再検討の結果、*Argiope aetheroidea* YIN *et al.*, 1989 であるとの結論に達したので、多くの標本にもとづいて再記載し、報告した。

References

- KARSCH, F., 1878. Exotisch-araneologisches. *Zeits. gesam. Naturw.*, **51**: 323–333, 771–826. (Not seen.)
- KISHIDA, K., 1936. A synopsis of the Japanese spiders of the genus *Argiope* in broad sense. *Acta arachnol.*, **1**: 14–27. (In Japanese.)
- LEVI, H., 1983. The orb-weaver genera *Argiope*, *Gea*, and *Neogea* from the western Pacific region (Araneae: Araneidae, Argiopinae). *Bull. Mus. comp. Zool.*, **150**: 247–338.
- SHINKAI, E., & S. TAKANO, 1984. A Field Guide to the Spiders of Japan. 206 pp. Tokai Univ. Press, Tokyo. (In Japanese.)
- & ——— 1987. 50 Fundamental Species of the Japanese Spiders. 128 pp. Shinrin Shobo, Tokyo. (In Japanese.)
- WALCKENAER, C. A., 1841. Histoire Naturelle des Insectes. Aptères. Tome II. 549 pp. Paris. (Not seen.)
- YAGINUMA, T., 1968. Spiders of Japan in Colour (enl. rev. ed.). 197 pp., 56 pls. Hoikusha, Osaka. (In Japanese.)
- 1970. The spider fauna of Japan (revised in 1970). *Bull. natn. Sci. Mus., Tokyo*, **13**: 639–701. (In Japanese with English summary.)
- 1977. A list of Japanese spiders (revised in 1977). *Acta arachnol.*, **27** (spec. no.): 367–406. (In Japanese with English synopsis.)
- 1986. Spiders of Japan in Color (n. ed.). 305 pp., 64 pls. Hoikusha, Osaka. (In Japanese.)
- & E. SHINKAI, 1971. Collecting data (I). *Atypus*, (57): 18. (In Japanese.)
- , Y. HIRASHIMA & C. OKUMA, 1990. Spiders. Etymology of their Scientific and Japanese Names. 287 pp. Kyushu Univ. Press, Fukuoka. (In Japanese.)
- YIN, C.-m., J.-f. WANG, Y.-ZHANG, X.-j. PENG & X.-CHEN, 1989. The study on the subfamily *Argiope* [sic] from China (Araneae: Araneidae). *Nat. Sci. J. Hunan Norm. Univ.*, **12**: 60–69.